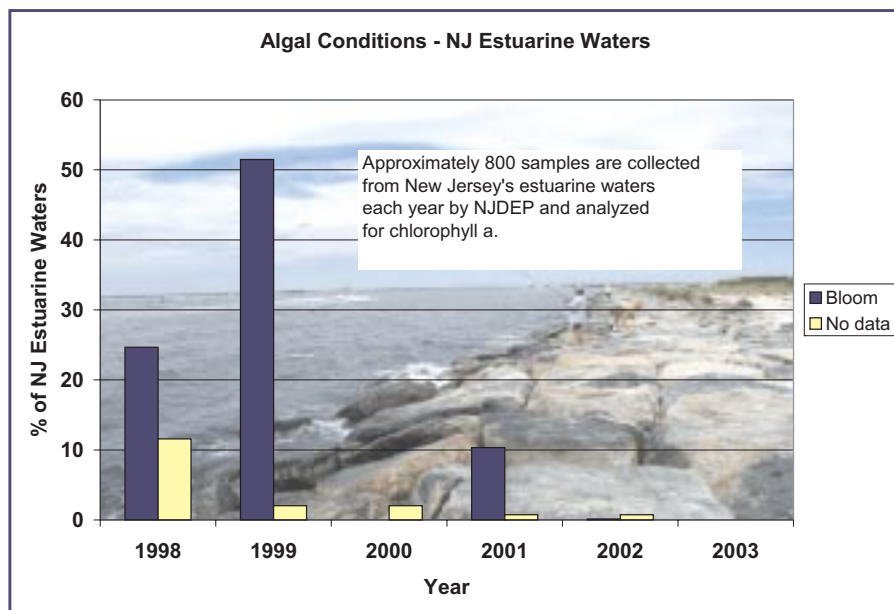


Marine Water Pollution: Chlorophyll a.

Background

Chlorophyll a is a plant pigment used to determine the amount of algal biomass present in a body of water. Currently, the Bureau of Marine Water Monitoring collects 960 water samples per year, covering all estuarine waters from the Raritan Bay to the Delaware Bay up to the points beyond which tidal influence is not observed (head of tide). Excessive amounts of chlorophyll a indicate an algal bloom that may reduce water clarity and may result in depleted dissolved oxygen levels. Algal bloom conditions have been defined by routine chlorophyll measurements.¹

Using this definition of blooms based on chlorophyll a measurements, the chart above shows the percent of New Jersey's estuarine waters that experienced bloom conditions over a six-year period. The chart also shows the percentage of waters in each year for which the DEP has no data due to the inability to perform the monitoring for reasons such as insufficient resources, extended illness of staff or weather conditions that prevented sampling. Fortunately this situation has been improving in recent years.



Trend

As can be seen from the chart above, there were more bloom conditions in the late 1990s, especially in 1999 when as much as 50 percent of the state's estuarine waters experienced some sort of bloom conditions. Since 2000, bloom conditions have been less prevalent. Among the factors that could be responsible for this trend would be inter-annual changes in rainfall, offshore phytoplankton conditions and changes to nutrient loading into these coastal waters.

Outlook and Implications

In general, algal blooms tend to occur in areas with nutrient over-enrichment. In the long term, efforts to reduce anthropogenic nutrient loads to New Jersey's coastal waters, combined with a better understanding of the effects of meteorological and oceanographic conditions, should help us minimize the occurrence of algal blooms.

More Information

Additional information can be obtained by contacting DEP's Bureau of Marine Water Monitoring at (609) 748-2000 or by visiting www.nj.gov/dep/bmw.

References

¹ Cosper, E.M. 1995. Assessment of Historical Phytoplankton Characteristics and Bloom Phenomena in the New York Harbor Estuarine and New York Bight Ecosystems. Preliminary Report. E.M. Cosper, Coastal and Environmental Studies, Inc., Bohemia, NY. May 4, 1995.